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ABSTRACT

The report analyzes research on characteristics of gifted and talented persons and suggests a rationale for identification systems. The importance of an operational definition is emphasized, and various conceptions and definitions of giftedness are reviewed. Problems with the U.S. Office of Education definition are cited. Three cluster areas characteristic of giftedness are descried: above average ability, creativity, and task commitment. It is pointed out that identification procedures should give equal attention to all three clusters. A definition of giftedness is proposed and a graphic representation is included. Six guidelines (including assessment of self-chosen and required performances and continual evaluation of the adequacy of the identification program) are outlined for identification systems. Five areas of information (preschool and developmental, psychometric, performance, motivational, and sociometric) are suggested for developing identification. A revolving door approach and use of full time equivalent concepts are recommended. (CL)

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What Makes Giftedness?

A Reexamination of the Definition of the Gifted and Talented

NSLHGT
BRIEF Number 6

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What Makes Giftedness: A Reexamination of the Definition of the Gifted and Talented

by

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Bureau of Educational Research
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Ventura County Superintendent of Schools Office
Ventura, California
May 1979

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FOREWORD

Proceed With Caution

This monograph represents an attempt to summarize a large number of research studies dealing with the characteristics of gifted and talented persons and to draw some conclusions that will provide a defensible rationale for developing identification systems. There are, however, two important cautions that should be kept in mind as you delve into the sections that follow.

The Gifted and the Potentially Gifted

The first caution relates to the subtle but very important distinction that exists between the "gifted" and the "potentially gifted." Most of the research reviewed in this monograph deals with student and adult populations that have been judged (by one or more criteria) to be gifted. In most cases researchers have studied those persons who have been identified as "being gifted" much more intensively than persons who were not recognized or selected because of unusual accomplishments. The general approach to the study of gifted persons could easily lead the casual reader to believe that giftedness is a condition that is magically bestowed upon a person in much the same way that nature endows us with blue eyes, red hair, or a dark complexion. This position is *not* supported by the research. Rather, what the research clearly and unequivocally tells us is that *giftedness is a condition that can be developed* in some people if an appropriate interaction takes place between a person, his or her environment, and a particular area of human endeavor. In the sections that follow, therefore, it is important to keep in mind that when I describe a certain trait as being a component of giftedness (for example, creativity), I am in no way assuming that one is "born with" this trait. Almost all human abilities can be developed and therefore my intent is to call attention to the potentially gifted (that is to say, those who could "make it" under the right conditions) as well as those who have been studied because they gained some type of recognition. Implicit in this concept of the potentially gifted then, is the idea that giftedness emerges or "comes out" at different times and under diffferent circumstances.

The All or Nothing at All Concept vs. Differentiated Giftedness

In a similar fashion, I would like to point out another fallacy in our thinking that has resulted from the ways in which most school programs for gifted youngsters are organized. I will refer to this fallacy as, "The all-or-nothing-at-all-concept" and in the final section of this monograph an effort will be made to point out a relatively simple and practical method for overcoming this fallacy.

Because of certain state guidelines, local regulations, or mere administrative expediency, most students are either selected or not selected for a special program – the illogical conclusion that many people draw from this

practice is that giftedness (once again, like blue eyes or red hair) is something that you "have" all of the time or you don't have. Both research and plain old common sense clearly tell us that this is not the case. People display "gifted behavior" at certain times and under certain conditions. Some youngsters may be gifted in mathematics but not in language arts and others may be gifted in mathematics but not in language arts, and others may be gifted in music or industrial arts but not in social studies. I will refer to these variations in ability as "differentiated giftedness." For this reason, a "revolving door" concept of programming would be a better rationale for special services than the traditional method of selecting or rejecting a student for all subjects and and for an entire school year. The revolving door approach simply means that students can come into and out of the program, or take advantage of any available special services, as the need arises. Thus, the revolving-door approach will greatly increase the number of students upon whom special services can be brought to bear, minimize concerns about elitism by doing away with the "you-have-it" or "you-don't-have-it" concept and, most important, provide supplementary services *at the time* and *in the performance areas* where such services have the highest potential of doing the most good for a particular youngster.

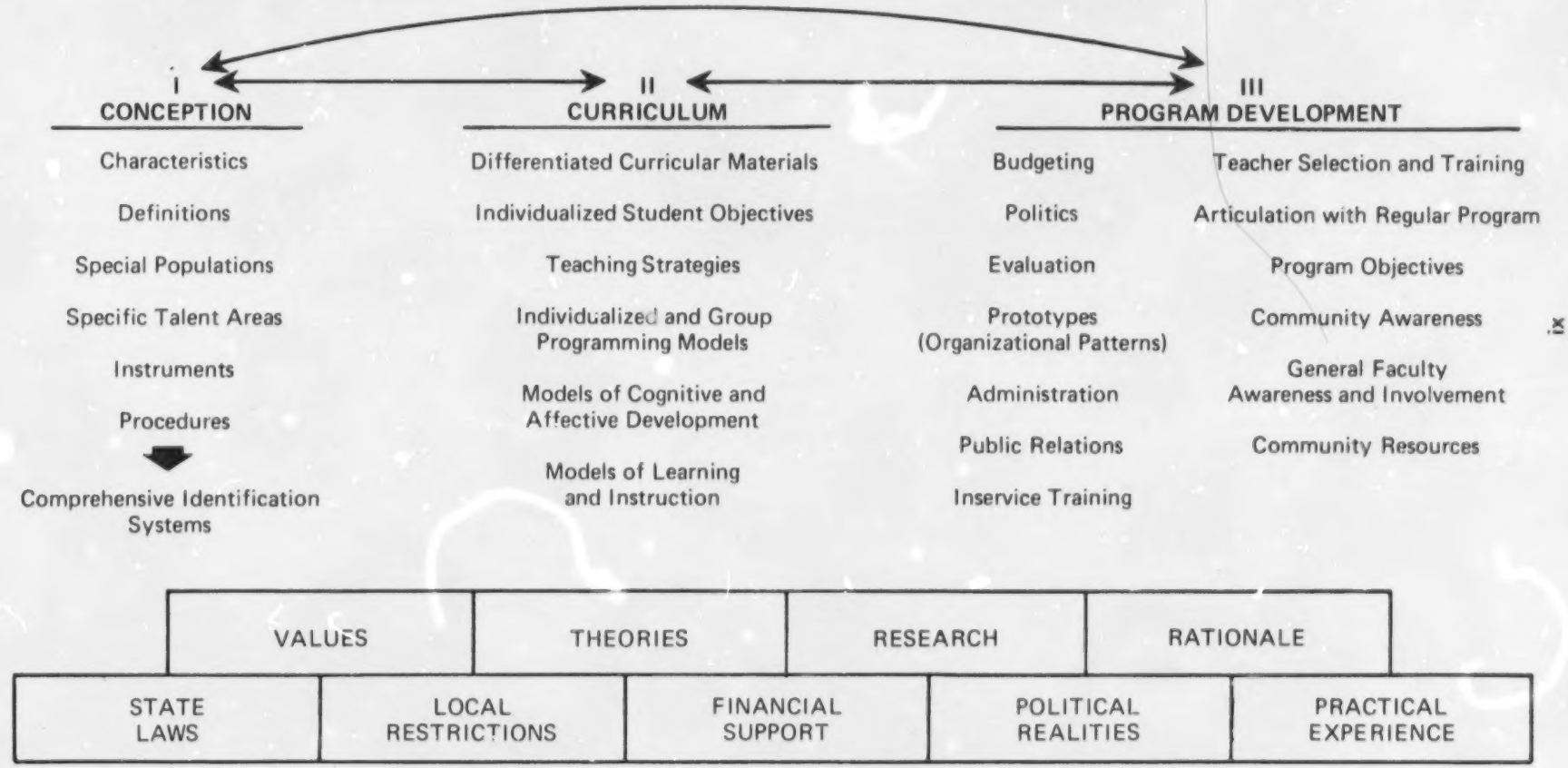
As you read the sections that follow, try to keep in mind the revolving door concept and the concept of differentiated giftedness. At the conclusion of the monograph we will return to these concepts and point out a practical approach that attempts to resolve some of the differences that exist between theory and research on one hand, and the practical problems of identification on the other.

The Interaction among Conceptions of Giftedness and Other Dimensions of Special Programs

A second major caution that should be kept in mind as one pursues the following sections is the important relationship that exists among one's conception of giftedness on one hand and curricular expriences and program development activities on the other. This relationship is depicted in Figure A. These three major dimensions of programming for the gifted and talented are interdependent and although this monograph deals mainly with the first column in Figure A, (that is, conception) it is important to keep in mind that the way one "views" giftedness will be highly influential in both curricular decision making and program-development activities. For example, if high nonverbal or mathematical aptitude is an important part of your conception of giftedness, then it would logically follow that curricular experiences should be selected that capitalize upon this particular aptitude. Similarly, to take an example or two from the third column in Figure A, it would be important to select teachers who are capable of providing advanced levels of challenge in mathematics. If your program prototype (organizational pattern) was mainly the acceleration of mathematical content, then it would be important to make certain that arrangements were made for careful articulation with other teachers and the regular curriculum. Otherwise, students who used the ninth grade algebra book in the sixth grade, for example, might end up being "dragged" through this same book when they reach the junior high school.

The two rows at the bottom of Figure A represent various "building blocks" of programs for the gifted and talented. Each building block contrib-

Figure A
Dimensions of Programs for the Gifted and Talented



utes in one way or another to each of the three major dimensions above. The first row is a highly idealistic one, whereas the second row represents many of the practical concerns and realities that often must be considered in developing special programs. Although most persons would agree that we should develop identification systems on the best values, theories, etc., it goes without saying that we must often strike a compromise between such idealism and the realities of state laws, financial support, etc. As is indicated above, this monograph represents an attempt to provide a defensible rationale for developing identification systems. The major purpose of presenting Figure A is simply to remind the reader that a discussion of conceptions of giftedness and guidelines for identification cannot be considered without looking at (1) the many interrelationships that this dimension of programming shares with the other two dimensions, and (2) the many influences (building blocks) that affect our thinking with regard to each dimension.

PREFACE

The Problem in a Nutshell

The "In" Thing

One of the most popular concepts in the field of education for the gifted is support for the development of diverse talents and the use of multiple criteria in the identification of students for special programs. Indeed, "multiple talents" and "multiple criteria" are the by-words of almost all persons working in this field.

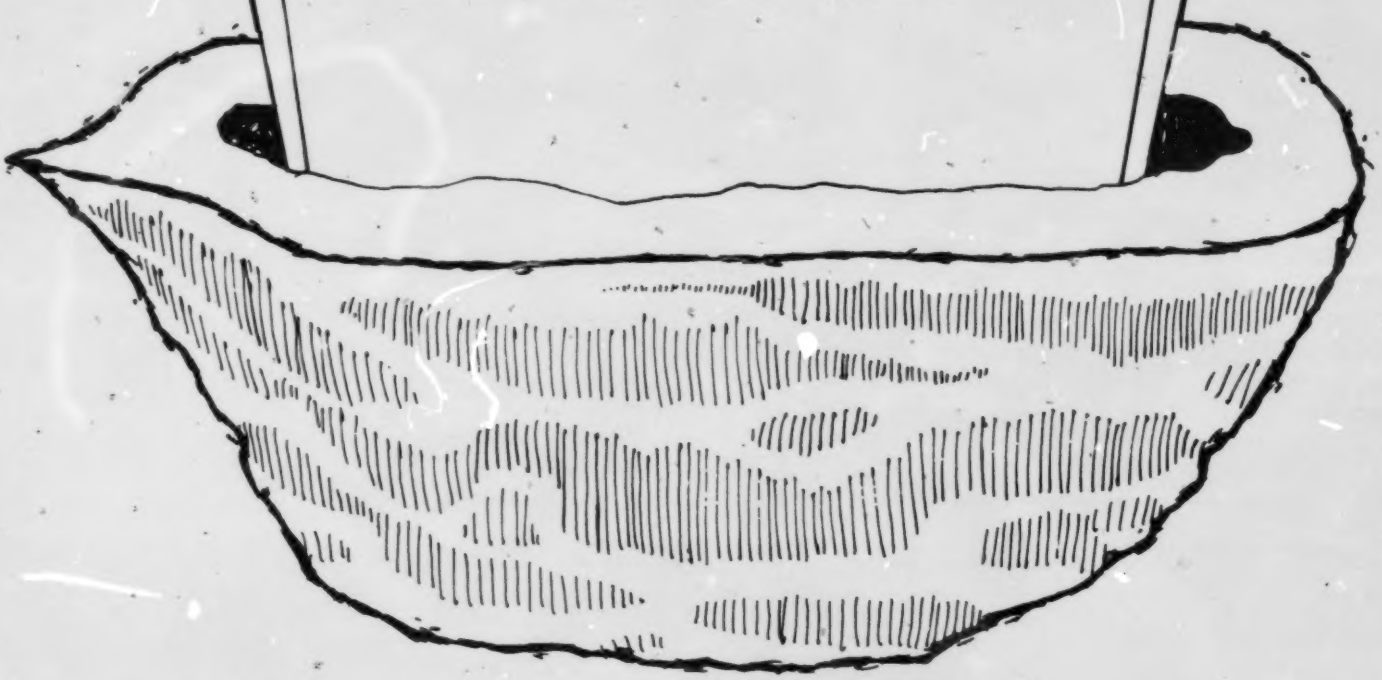
The Big Question — Please Answer by Checking the Appropriate Space!

In view of the almost total acceptance of the multiple talent/multiple criteria concept, a very interesting question might be raised. Is there any justification for placing a youngster with a 118 IQ in a program for the gifted *ahead of or in place of* a child with an IQ of 138, 148, or 158? (Keep in mind that, in general, only a limited number of children can be selected for special program placement.) Yes _____ No _____

If the answer to this question is "No," then we probably should be graceful about the identification issue and return to a "straight IQ" criterion for selection. But if the answer is "Yes," then we must be prepared to justify our position by establishing a definition of giftedness that is defensible in terms of both our beliefs and the best available research on the characteristics of gifted and talented persons.

The Challenge of a "Yes"

The purpose of this handbook is to examine past and present concepts of giftedness; to review studies that support a broadened approach to identifying gifted and talented students; and to present a definition and set of principles that can be used to guide identification practices.



ACKNOWLEDGMENT

The writer would like to express his thanks to Dr. Reva C.W. Jenkins, the University of Kansas, for her invaluable assistance in the preparation of this monograph.

We Americans are justly proud of our egalitarianism, of our demand for equal education for all, but we are equally proud of our goal of individualization to fit the program to the child's needs. We have moved far toward providing access to education for all, but we are less effective in meeting the differing needs and abilities of individual children. For those children at the extremes – the handicapped and the gifted – the commitment to individualization has been halting and incomplete. Failure to help the handicapped child reach his potential is a personal tragedy for him and his family; failure to help the gifted child reach his potential is a societal tragedy, the extent of which is difficult to measure but which is surely great. How can we measure the sonata unwritten, the curative drug undiscovered, the absence of political insight? They are the difference between what we are and what we could be as a society.

James J. Gallagher
Teaching the Gifted Child

I. INTRODUCTION

Throughout recorded history, and undoubtedly even before records were kept, people have always been interested in men and women who have displayed superior ability. As early as 2200 B.C. the Chinese had developed an elaborate system of competitive examinations to select outstanding persons for government positions (DuBois, 1970) and down through the ages almost every culture has had a special fascination about its most able citizens. Although the areas of performance in which one might be recognized as a "gifted" person are determined by the needs and values of the prevailing culture, scholars and lay persons alike have debated (and continue to debate) the age-old issue of "what makes giftedness." What factors cause some individuals to perform so well in their respective fields of endeavor that they gain recognition by their peers, the teachers, or the culture at large? This general concern, coupled with the more pratical responsibilities of formal education systems, has caused psychologists and educators to raise two related questions:

> How can we identify persons who have the highest potential for superior performance?
>
> What types of learning experiences can we provide to develop this potential?

Within the field of special education for the gifted more attention probably has been devoted to the topics of identification and characteristics than all other areas combined. And yet there still remains a great deal of disagreement about the definition of giftedness and the specific procedures that

should be used to select students for participation in special programs. Although this disagreement is an obviously healthy aspect of a dynamic field, it also has hampered the efforts of practitioners who are faced with the Monday-morning realities of identifying students and implementing school programs for the gifted and talented.

The purposes of this monograph are threefold. First, a brief analysis will be made of some of the past and present definitions of giftedness. Second, studies that deal with the characteristics of gifted individuals will be reviewed and a new definition of giftedness will be presented. This definition was formulated to be operational in terms of the practical needs of school personnel and defensible in terms of what research tells us about the characteristics of gifted individuals. Third, an overview of guidelines and information to be employed in an identification system will be provided.

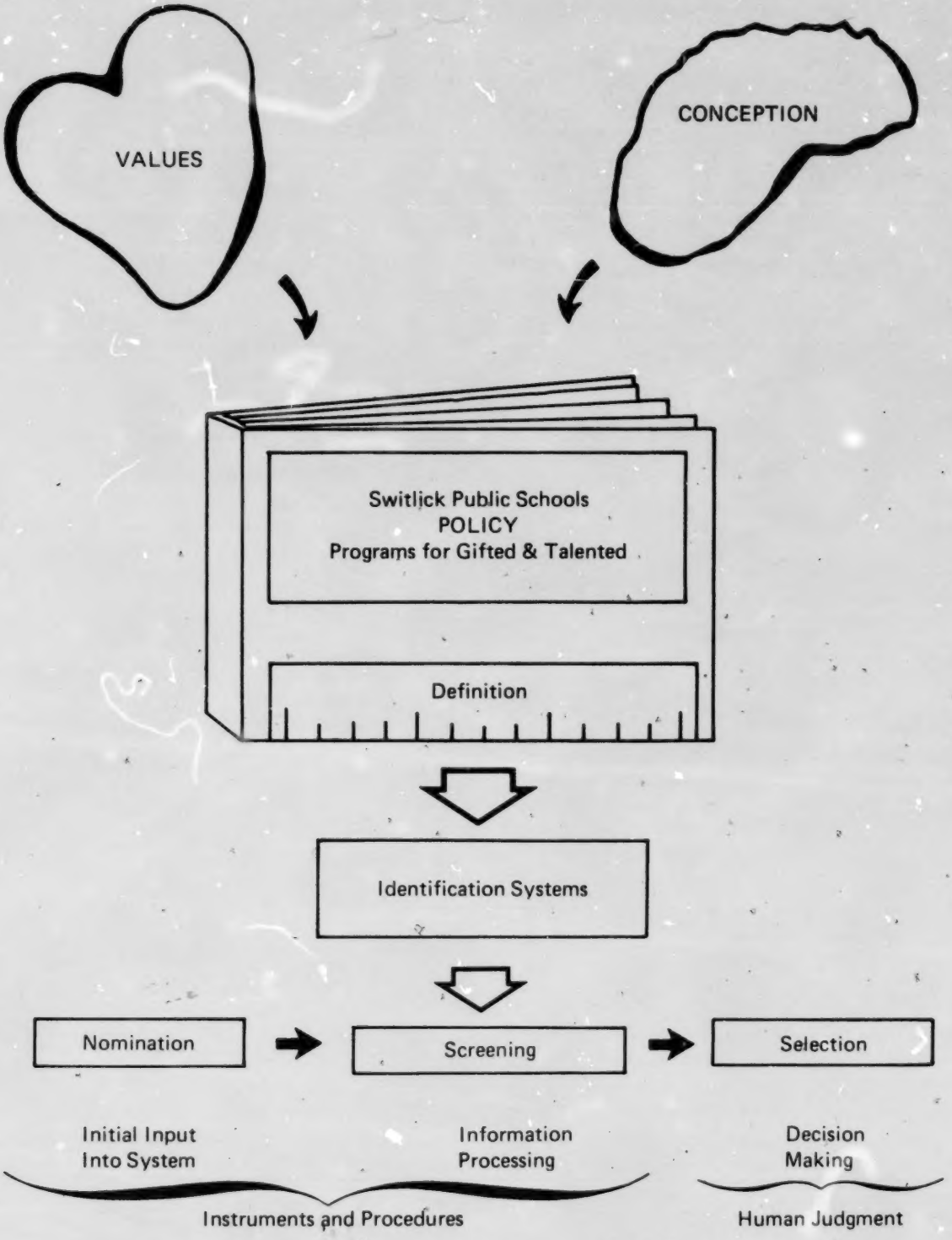
In Defense of a Definition

An operational definition of giftedness is considered to be an essential part of any special program because it gives direction both to identification systems and to practices that become the major focus of special educational efforts. Unlike our values and conception of giftedness, which are figuratively carried around in one's heart and brain (see Figure 1.), a definition is an explicit written statement, and thus becomes a part of policy and sometimes even a regulation or statute. Policy is open to both scholarly and practical scrutiny and for these reasons it is important that definition meet the following three criteria:

1. It must be based on the best available research about the characteristics of gifted individuals rather than romanticized notions or unsupported opinions.
2. It must provide guidance in the selection and/or development of instruments and procedures that can be used to design defensible identification systems.
3. It must give direction, and be logically related to programming pratices such as the selection of materials and instructional methods, the selection and training of teachers, and the determination of procedures whereby programs can be evaluated.

The second of these three criteria is especially important with regard to the role that a definition plays in generating research related to identification practices. A definition may not provide "all the answers" so far as particular identification needs are concerned, but if it is defensible in terms of logic, previous research, and a generally agreed upon set of values, then it can serve the very practical purpose of pointing the way toward instruments and techniques that need to be developed. In other words, a defensible definition should provide direction in instrument selection and/or development. This is preferable to allowing the mere availability of instruments to be used as the major criterion for developing a definition. Then our identification procedures, and perhaps our entire program, will be in the uncomfortable position of the dog who was wagged by his tail. The vulnerability of the position in which programs are thus placed is all too obvious.

Figure 1.
Relationship Between Values/Conception/Definition and Identification Systems



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II. THE DEFINITION CONTINUUM

Numerous conceptions and countless definitions of giftedness have been proposed over the decades. One scheme for analyzing existing definitions is to rank them along a continuum ranging from conservative to liberal. The reader should note that these terms are not employed in this context according to their popular political connotations, but rather according to the degree of restrictiveness they embody in determining who would be eligible for special programs and services.

Restrictiveness can be expressed in two ways. First, a definition can limit the number of specific performance areas[1] that are considered in determining eligibility for special programs. A conservative definition might, for example, limit eligibility to academic performance only and exclude other areas such as music, art, drama, leadership, public speaking, social service, and creative writing. Second, a definition might specify the minimum level or degree of excellence one must attain to be considered gifted.

At the conservative end of the continuum is Lewis M. Terman's (1926) definition of giftedness: "The top one percent level in general intellectual ability, as measured by the Stanford-Binet Intelligence Scale or a comparable instrument" (p. 43). In this definition restrictiveness appears in terms of both the type of performance specified (that is, intelligence test tasks) and the level of performance required for one to be designated gifted (that is, the top one percent).

At the other end of the continuum might be found more liberal definitions such as the following one developed by Paul Witty (1958):

> *There are children whose outstanding potentialities in art, in writing, or in social leadership can be recognized largely by their performance. Hence, we have recommended that the definition of giftedness be expanded and that we consider any child gifted whose performance, in a potentially valuable line of human activity, is consistently remarkable* (p. 62).

Although liberal definitions have the obvious advantage of expanding the conception of giftedness, they also open up two "cans of worms" by introducing a values issue (that is, what are the potentially valuable lines of human activity?) and the age-old problem of subjectivity in measurement. Briefly stated, as the conception of giftedness expands beyond the traditional areas of academic performance, increasingly larger amounts of human judgment must be relied upon to determine the levels at which performance might be considered to be consistently remarkable.

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1. The term, specific performance areas, is defined in detail on Page 1. Because of the importance of this term and two others defined in the same section, it might be advisable to review their meanings at this time.

In recent years the values issue has been largely resolved. There are very few educators who cling tenaciously to a "straight IQ" definition or purely academic criteria for identifying giftedness. "Multiple talent" and "multiple criteria" are almost the by-words of the present-day gifted-student movement, and the most knowledgeable persons would have little difficulty in accepting a definition that includes almost every area of human activity that manifests itself in a socially useful form of expression.

The problem of subjectivity in measurement is not as easily resolved. As the definition of giftedness is extended beyond those abilities that are clearly reflected in tests of intelligence, achievement, and academic aptitude, it becomes necessary to place less emphasis on precise estimates of performance and potential, and more emphasis on the opinions of qualified human judges in making decisions about admission to special programs. The crux of the issue boils down to a simple and yet very important question. How much of a "trade off" are we willing to make on the objective/subjective continuum in order to allow recognition of a broader spectrum of human abilities? If some degree of subjectivity cannot be tolerated, then our definition of giftedness and the resulting programs will logically be limited to abilities that can only be measured by objective tests. It is interesting to note that for hundreds of years people in the arts have been identifying and developing the talents of young people and this process has been carried out almost exclusively *without* the aid of standardized tests. Most persons in the arts (and other areas of creative expression) would undoubtedly say that the wrong kind of information is collected when tests are used to identify talent potential. They would probably also agree that it is far better to have imprecise estimates about the right information than precise data about the wrong information.

The U.S.O.E. Definition

In recent years the following definition set forth by the U.S. Office of Education (Marland, 1972) has grown in popularity and numerous states and school districts throughout the nation have adopted it for their programs:

> *Gifted and talented children are those, identified by professionally qualified persons, who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society.*
>
> *Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas, singly or in combination:*
>
> 1. *General intellectual ability*
> 2. *Specific academic aptitude*
> 3. *Creative or productive thinking*
> 4. *Leadership ability*
> 5. *Visual and performing arts*
> 6. *Psychomotor ability.*

The Office of Education definition has served the very useful purpose of calling attention to a wider variety of abilities that should be included in a definition of giftedness but, at the same time, it has also presented some

major problems. The first problem is the failure to include non-intellective (motivational) factors. These factors, which will be discussed in greater detail below, are supported by an overwhelming body of research studies dealing with the accomplishments of gifted and talented persons. These studies consistently point out that motivation or task commitment is an essential characteristic of all persons who have achieved recognition as a result of their creative/productive contributions.

A second and equally important problem relates to the non-parallel nature of the six categories included in the definition. Two of the six categories (specific academic aptitude and visual and performing arts) call attention to fields of human endeavor or general performance areas in which talents and abilities are manifested. The remaining four categories are more nearly processes that can be bought to bear on performance areas. For example, a person can bring the process of creativity to bear on a specific aptitude (for example, chemistry) or a visual art (such as photography). Or the processes of leadership and general intelligence might be applied to a performance area such as choreography or the management of a high school yearbook. We might go so far as to say that processes such as creativity and leadership do not exist apart from a performance area to which they can be applied.[2]

A third problem with the definition is that it tends to be misinterpreted and misused by practitioners. It is not uncommon to find educators developing entire identification systems based on the six USOE categories and in the process treating them as if they were mutually exclusive. What is equally distressing is the lip service that many people pay relative to the six categories, and yet they continue to rely on a relatively high intelligence or aptitude test score as a minimum requirement for entrance into a special program. Although both of these problems result from misinterpretations rather than from the definition itself, the definition is not entirely without fault because it fails to provide the kind of guidance essential to avoid such pitfalls. These problems, coupled with the definition's failure to reflect research findings based on non-intellective dimensions of giftedness, suggest that a reexamination of our general conception of giftedness and its interface with the current USOE definition is in order.

Toward a Definition of Giftedness

Developing an operational definition of giftedness has been a very elusive problem because of the many concepts and frequently vague terms that have been used as the bases of definitions. From platform rhetoric to policy statements, psychological constructs such as ability, capacity, potential, intelligence, achievement, and creativity are over-used, often employed synonymously, and frequently remain undefined themselves. Added to these concepts is an ever-growing list of educational terms such as academically talented, creatively gifted, productive thinker, and kinesthetically gifted. To

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2. The issue of whether or not all processes such as creativity and leadership exist apart from a performance area or specific situation is as moot as the philosophical problem of the tree falling in the forest. The issue has been raised in this instance in order to emphasize the vital role that performance play as we move toward a reconsideration of the definition of giftedness.

avoid confusion over the meaning of the concepts discussed in this chapter, it is necessary to clarify three important terms. These terms do *not* constitute a definition of giftedness, but rather are offered to facilitate communication in the discussion that follows.

A. *General Abilities*. This term describes several general areas of ability (including general intelligence) that are typically measured by tests of intelligence, achievement, aptitude, primary mental abilities, and creative thinking. Examples of such abilities are verbal and numerical reasoning, spatial relations, ideational fluency, and originality. It should be emphasized, however, that there are many areas of general ability that are *not* easily measured by tests. Such areas include the creative and performing arts, leadership, and social relations.

   The word *general* is emphasized in defining this term because each ability can be brought to bear on several specific types of performance. For example, verbal ability can be used in a wide variety of listening, reading, speaking, and writing situations. Thus, it is a general rather than a specific ability.

B. *Specific Performance Areas*. This term will be used to describe the numerous ways and means through which human beings express themselves in real life (that is, non-test) situations. Examples of specific performance areas are: chemistry, sculpture, poetry, photography, and landscape architecture. Each performance area can be further subdivided into even more specific fields of endeavor such as portrait photography, astrophotography, photo journalism, and microphotography.

C. *Creative/Productive*. This term will be used as an adjective to describe those aspects of involvement that are oriented toward the "output" of original material in a performance area. The area of creative writing, for example, can be divided into those types of involvement in which an individual learns about style, technique, characterization, etc. (input) and a second type of involvement in which the person actually produces creative stories, poems, or plays (output). The first type of involvement casts the individual in the role of a learner or consumer of important information about writing. In the second type of involvement, the individual is asked to apply or make use of basic information by writing poems, plays, or stories. Thus, the person has now assumed the role of the creative/productive writer. The two types of involvement are not, of course, mutually exclusive, nor should they necessarily be pursued separately or even sequentially in a learning situation. But it is essential to bear in mind that the second type of involvement (that is, the child writer) is a more important goal of special education for the gifted than is the goal of younsgter as lesson-learner. The term creative/productive will thus be used to describe more advanced types of involvement in any and all specific performance areas.

III. THE THREE-RING CONCEPTION OF GIFTEDNESS

Research on creative/productive individuals has shown consistently that although no single criterion can be used to determine giftedness, persons who have achieved recognition because of their unique accomplishments and creative contributions possess a relatively well-defined set of three interlocking clusters of traits. These clusters consist of above-average though not necessarily superior general ability, creativity, and task commitment (see Figure 2.). It is important to point out that no single cluster "makes giftedness." Rather, it is the interaction among the three clusters that research has shown to be the essential ingredient for creative/productive accomplishments. This interaction is represented by the shaded portion of Figure 2. It is also important to point out that each cluster contributes equally to giftedness. In other words, task commitment and creativity are not simply extras; they are equally important ingredients in the make-up of a gifted person.

In the sections that follow, each cluster will be discussed in terms of a wide variety of research findings. Rather than simply highlighting the strengths and limitations of each cluster, attention will be focused on the information added by including each of the clusters of traits in an attempt to respect the broadened conception of giftedness and to improve the identification of individuals with the greatest potential for creative productivity. Finally, the general goal will be to argue for a definition of giftedness that places equal emphasis on each of the three major clusters.

Above Average Ability

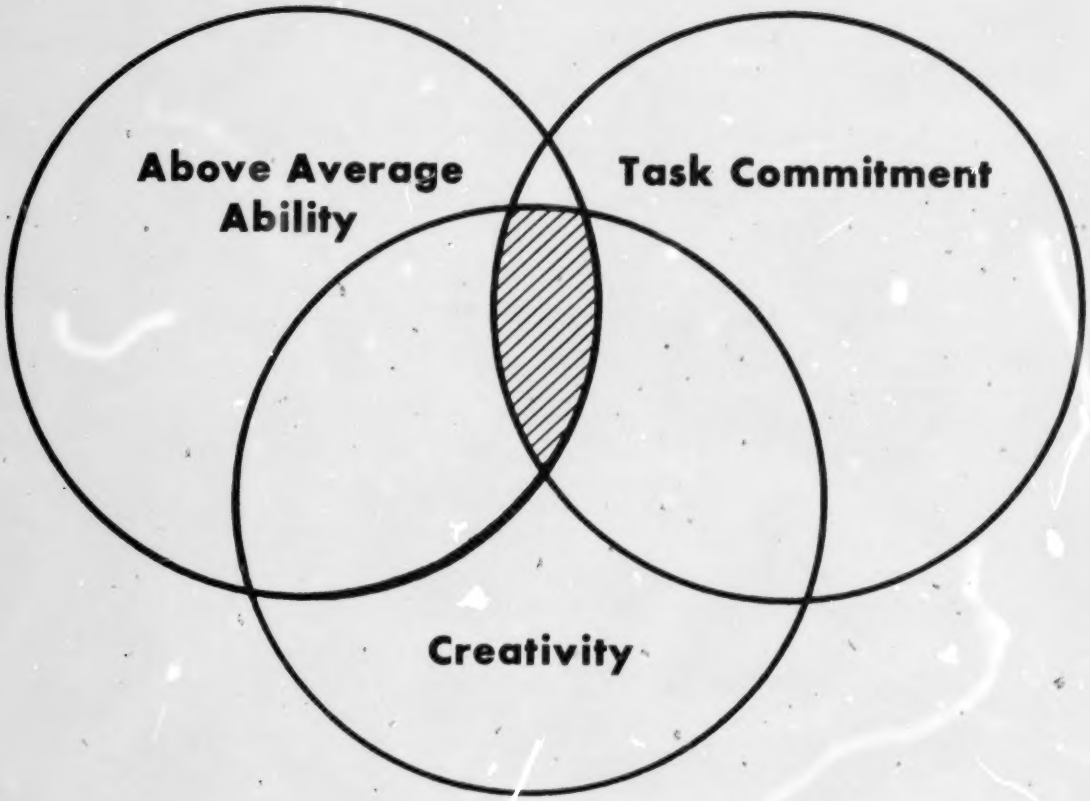
Although extremely high scores on tests of general ability have been predominant in the identification of gifted students, heavy reliance on these measures is a practice of questionable value. The intent of the discussion that follows is not to convince practitioners to "throw out" test scores or to eliminate the use of measures of general ability, but rather to argue for less reliance upon traditional measures of intelligence and aptitude and less severe cut-off points in making selection decisions.

One of the most consistent mistakes made in the identification of the gifted child has been to confuse proficiency (usually measured by test scores and grade point averages) with creative productivity. The fact that a youngster performs well on tests or learns lessons well is no guarantee that this individual possesses the other characteristics unique to creative/productive persons. Even Terman (1959, pp. 148-9), from whom much of the legacy of equating measured intelligence with giftedness was derived, states in his later writings that high intelligence and giftedness were not necessarily synonymous.

Any serious attempt to reexamine the definition of giftedness must begin by clearly distinguishing between proficiency in lesson-learning and test-taking on the one hand and innovative behavior and creative/productive

Figure 2.

What Makes Gifted [illegible]



accomplishments on the other. Research reported below clearly indicates that vast numbers *and* proportions of our society's most productive persons are *not* those who scored at the 95th+ percentile on standardized tests, nor were they necessarily straight *A* students who discovered early how to play the lesson-learning game. In other words, more creative/productive persons come from below the 95th percentile than from above it. If such cut-off scores are are used to determine entrance into special programs, educators might be guilty of actually discriminating against persons who have the greatest potential for high levels of accomplishment.

Although the influence of intelligence traditionally assessed quite obviously varies across areas of achievement, many researchers have found that creative accomplisment is not necessarily a function of measured intelligence alone. In a review of research studies which examined the predictive strength of tests measuring intellectual aptitude and academic achievement, Wallach (1976) found that the power of intelligence and achievement tests to identify future creative producers is greatly diminished when one achieves scores in the upper ranges as follows:

> *Above intermediate score levels, academic-skills assessments are found to show so little criterion validity as to be questionable bases on which to make consequential decisions about students' futures. What the academic tests* do *predict are the results a person will obtain on other tests of the same kind* (p. 57).

Wallach goes on to point out that academic test scores at the upper ranges—precisely the score levels that are most often used for selecting persons for entrance into special programs—do not necessarily reflect the potential for creative/productive accomplishment. Wallach suggests that test scores should be used only to screen out persons who score in the lower ranges and that beyond this point decisions should be based on samples of professional competence.

Cox (1926) conducted an extremely comprehensive biographical study of 300 of the most eminent individuals of history. A variety of procedures were used to estimate the IQ of her subjects, which ranged from 100 to 200, with an average of 155. Cox concluded that "the genius who achieves highest eminence is one whom intelligence tests would have identified as gifted in childhood" (Terman, 1947, p. 6). However, Terman reported that Cox also warns that the converse of this is not necessarily valid: "We may not conclude that every child who tests high will become eminent" (p. 6). In his own longitudinal study of 1,300 subjects scoring 140 or higher on the Stanford-Binet Intelligence Scale, Terman found that as adults his subjects pursued a wide range of occupations "as humble as those of policeman. ...seaman, ...typist, and filing clerk" (Terman, cited in Vernon, 1970, p. 39). Terman also noted that for his *A* and *C* groups (representing the highest and lowest quartiles respectively in ratings of life success), earliest nonacademic performance differences between the groups appeared in college, where the *A* group participated in extracurricular activities almost twice as frequently as the *C* group. Terman concluded that not only for the 1,300 subjects participating in the study but, in general, "we have seen that intellect and (later life) achievement are far from perfectly correlated" (Terman, cited in Barbie and Renzulli, 1975, p. 19).

In a critique of the testing movement, McClelland (1973) cautions against equating correlation with causation, and suggests that "the correlation between intelligence test scores and job success often may be an artifact, the product of their joint association with class status" (p. 3). He cites the need for appropriate behavioral indicators of proficiency, and suggests that "it may be desirable to assess competencies that are generally useful in clusters of life outcomes, including not only occupational outcomes but social ones as well, such as leadership, interpersonal skills, etc." (p. 9).

The absence of a strong relationship between assessments of intellectual ability as measured by school grades or tests of achievement or intelligence and later life professional contributions has been well documented in a variety of professional fields, using a wide range of criteria. In a study of the relationship between the contributions of physicists and biologists (based on such criteria as patents granted and number of publications), Harmon (1963) found that individuals receiving high ratings as professional scientists could not be predicted from any of the academic proficiency information. He also discovered that for nearly half of the correlations computed, the direction of the relationship between these traditional measures of academic success and professional accomplishments was negative. In two studies of professional mathematicians, Helson (1971), and Helson and Crutchfield (1970) found no significant IQ-score differences between mathematicians judged by their peers as performing particularly good research and a control group of low productive mathematicians. There were, however, differences between the groups on a variety of personality measures purporting to assess proclivities for creative behavior. Similar results have been reported in studies of chemists and mathematicians (Bloom, 1963), psychologists (Marston, 1971), research scientists (MacKinnon, 1968), artists (Barron, 1963), and architects (MacKinnon, 1968). While the influence of restricted range must certainly be considered, it seems apparent that for individuals whose intellectual ability exceeds a minimum or threshold level for entry into the particular field, professional attainments are a function of abilities other than those measured by tests of academic achievement or intelligence.

In an extremely comprehensive review of occupational studies dealing with traditional indicators of academic success and post-college performance, Hoyt (1965) concluded that traditional assessments of academic success have at best a modest correlation with various indicators of success in the adult world. The review included forty-six studies in seven occupational areas including business, teaching, engineering, medicine, scientific research, journalism, government, and the ministry. The criteria for determining the level of accomplishment varied from salary level to numbers of publications to behavioral performance ratings. Although a number of the studies suffered from experimental-measurement or statistical weaknesses, Hoyt asserted that sufficient evidence had been aggregated to warrant a conclusion that "there is good reason to believe that academic achievement (knowledge) and other types of educational growth and development are relatively independent of each other" (p. 73). Similar conclusions were reached in analogous studies conducted by Ghiselli (1973), Creagar and Harmon (1966), and Baird (undated paper).

Given the inadvisability of relying on limited ability of grades or objective measures of intelligence and academic achievement to predict adult

accomplishment, other studies have attempted to establish the validity of additional indicators. Wallach (1976) suggested that the emphasis be shifted from test scores to actual accomplishments in screening applicants for special programs.

Several studies have explored ratings of extracurricular academic accomplishments. Parloff, Datta, Kleman and Handlon (1968) found that ratings of the novelty and effectiveness of high school students' research projects, conducted independently of course work, were uncorrelated with intellectual aptitude test scores or grades, although there were substantial differences in the quality of the projects. Mednick (1963) reported similar findings when college faculty evaluated independent research projects for imaginativeness and the degree to which they represented a contribution to knowledge in the field. The judged quality of the projects ranged widely, but the ratings had virtually no relationship to course grades or scores on the *Miller Analogies Test* (although the latter two did possess a high correlation). Wallach and Wing (1969) found that students' accomplishments outside the classroom in the areas of literature, science, art, music, dramatics, political leadership, and social services were reported as frequently for students in the lower third of score ranges on the *Scholastic Aptitude Test* as for students in the upper third. These findings assume greater importance when one takes into consideration the results of a study conducted by the American College Testing (ACT) Program titled, *Varieties of Accomplishment After College: Perspectives on the Meaning of Academic Talent* (Munday and Davis, 1974), as follows:

> *The adult accomplishments were found to be uncorrelated with academic talent, including test scores, high school grades, and college grades. However, the adult accomplishments were related to comparable high school nonacademic (extra curricular) accomplishments. This suggests that there are many kinds of talents related to later success which might be identified and nurtured by educational institutions (abstract).*

The ACT study focused on the accomplishments of over 2,200 adults, two years after college. The sample had completed a "Student Profile Section" as high school seniors taking the ACT Assessment. The adult follow-up questionnaire consisted of checklists of accomplishments in seven areas ranging from leadership to art to science. Test-retest reliabilities were considered adequate (from .79 for sicence to .93 for leadership). Moreover, the authors reported that the scales were highly independent of each other (for example, a person high in leadership did not also tend to score highly in drama).

The following correlations were calculated: between ACT composite scores and college grade point average; high school and college grades; high school accomplishments and college grades; ACT scores and adult accomplishments; and between high school accomplishments and respective adult accomplishments. Median correlations ranged from .01 (high school grades and adult accomplishments) to .39 (ACT scores and college grades). Median correlations for comparable high school and adult accomplishments were .22, a finding which the authors considered significant, considering the overall limitations of the research. They conclude that nonacademic accomplishments

should be considered in college admissions, and that educators should consider ways in which talents other than the academic might be nurtured by public schools.

Further support for reports of extracurricular, creative accomplishments as predictors of later, talented performance are presented by Holland and Astin (1962) and Baird (1976). The Holland and Astin study supported previous findings regarding the relationship between high academic performance and out-of-school accomplishments. They also found that for their sample of 354 to 953 high-aptitude students (assessed over intervals from one to four years), college achievement (defined as grades, checklists of unusual accomplishments in art and science and election to student office) was best predicted by simple self-ratings of past similar achievements in high school. This finding was consistent for three of the four areas of achievement assessed (leadership, scientific, and artistic). Only in the area of academic achievement did grades play a significant role in the prediction model. Holland and Astin concluded as follows:

> *...getting good grades in college has little connection with more remote and more socially relevant kinds of achievement; indeed, in some colleges, the higher the student's grades, the less likely it is that he is a person with creative potential. So it seems desirable to extend our criteria of talented performance.* (pp. 132-133).

As part of their interest in broadening the definition of talent, Baird (1976) reported that the National Merit Scholarship Corporation and the American College Testing Program have developed scales of "nonacademic" accomplishments in science, writing, art, music, speech, drama, and leadership (see Munday and Davis, 1974). Baird added that a variety of studies have shown that the scales demonstrated adequate reliability, are not subject to faking and, meet "various statistical criteria" (p. 3). ACT found in every study reported that the accomplishment scales were unrelated (or had very low correlations) with grades and the ACT academic ability test scores. Of particular note is that the ACT samples represented a broad range of academic talent among high school and college students (American College Testing Program, 1973).

In summary, there is a substantial body of evidence which suggests that measures of intellectual or academic potential be used only for initial screening purposes, or to establish minimum performance levels, and that greater use be made of indicators of creative thinking, ratings of past accomplishments, and ratings of creative production. Wallach (1976) strongly supported placing more emphasis on work samples as evidence of creative productivity. Hoyt (1965) suggested that greater reliance be placed on "profiles of student growth and development" rather than traditional means of determining academic success. His plea is not to lower standards but to individualize them more by developing checklists of accomplishments that can be indications of a number of things which students can do, and do frequently to demonstrate their potential.

The studies reported also raise some basic questions about the use of tests in making selection decisions. McClelland (1973) has pointed out that tests have tremendous power over the lives of young people and they have been especially efficient devices for screening out Black, Spanish speaking,

and other minority group members. To quote McClelland:

> *Why should intelligence or aptitude tests have all this power? What justifies the use of such tests in selecting applicants for college entrance or jobs? On what assumptions is the movement based? They deserve careful examination before we go on rather blindly promoting the use of tests as instruments of power in the lives of many Americans* (p. 1).

Creativity

The second cluster of traits that characterizes gifted persons consists of factors that usually have been lumped together under the general heading of "creativity." Creativity is, at the same time, the easiest and the most difficult cluster to discuss in the three-ring conception of giftedness. In many of the research projects cited previously, the persons ultimately selected for intensive study were in fact recognized *because* of their creative accomplishment. Eminence in the adult world is usually regarded as prima-facie evidence that an individual possesses creative ability. In fact, the terms "gifted," "genius," and "eminent" are often used synonymously when describing persons who have made significant contributions; it is usually the originality, novelty, or uniqueness of a person's contribution that brings him or her to the attention of the public.

In MacKinnon's (1964) study, for example, panels of qualified judges (professors of architecture and editors of major American architectural journals) were asked first to nominate and later to rate an initial pool of nominees using the following dimensions of creativity:

1. *Originality of thinking and freshness of approaches to architectural problems*
2. *Construct ingenuity*
3. *Ability to set aside established conventions and procedures when appropriate*
4. *A flair for devising effective and original fulfillments of the major demands of architecture, namely, technology (firmness), visual form (delight), planning (commodity), and human awareness and social purpose* (p. 360).

Panel members were also asked to write summary evaluations of the architect's work, indicating the basis for their nomination. A final step in the identification process was the architect's judging one another's creativity (MacKinnon, 1964, p. 361).

The process used by MacKinnon and others has important implications for both our efforts to formulate an operational definition of giftedness and the development of a set of guidelines that can be used to direct the identification process. First, the dimensions (or criteria) for creative accomplishment were formulated *within* specific performance areas (for example, architecture) *by* persons who have specialized expertise in the particular area. Second, the judgment of qualified persons (including peers) was the major procedure for identification. Finally, and perhaps most important, judgments were based on the actual performance (or products) of the nominees rather than traditional predictors of performance such as test scores or grade point averages. These implications will be discussed at greater length in the section dealing

with guidelines for identification systems.

The difficult aspect of discussing creativity relates to the problems researchers have encountered thus far in establishing relationships between creativity tests and other more substantial accomplishments. These problems may be grouped into three general categories. Briefly, they are the following: construct validity, criterion-related validity, and reliability of creativity measures.

Two major problems continue to cast doubt on the construct validity of creativity tests. They are the lack of a unified theory of creativity and an operational definition on which to base instruments (Treffinger, Renzulli, and Feldhusen, 1971) and an inability to produce sufficient evidence that current creativity tests tap a different set of abilities than those measured by tests of intelligence (Crockenberg, 1972; Ward, 1975). In fact, ideational fluency is the only form of creative thinking ability which research evidence supports as differing to a significant degree from intellectual aptitude (Singer and Whiton, 1971; Wallach, 1976; Wallach and Wing, 1969; Wallbrown and Huelsman, 1975).

Criterion-related validity issues include problems of possible criterion bias (Brogden and Taylor, 1950), and the lack of substantial relationship between performance on creativity tests and "real world" creativity (Crockenberg, 1972; Treffinger and Poggio, 1972, Treffinger, Renzulli, and Feldhusen, 1971). Although some validation studies have reported limited relationships between measures of divergent thinking and creative performance criteria (Dellas and Gaier, 1970; Guilford, 1967; Shapiro, 1968; Torrance, 1969; Torrance, 1972; Torrance, Bruch, and Morse, 1973), the research evidence for the predictive validity of such tests is not terribly strong. Unfortunately, very few tests have been validated against real-life criteria of creative accomplishments. In cases where such studies have been conducted, the creativity tests have fared poorly (Crockenberg, 1972), or the research has suffered from methodological problems such that it would not be possible to arrive at definitive conclusions. Baird (unpaged paper) alluded to the tenuous relationship between divergent-thinking measures and nontest, creative problem solving: "There is a large difference between a child's ability to think of 20 uses of a red brick and the publication of an article in a scientific journal." (p. 1) In addition, by their very nature tests of creativity eliminate an essential component of creative problem solving—that of problem definition (Getzels and Csikszentmihayli, 1975).

The reliability of these measures has also been questioned, the contention being that creativity-test performance is "much more susceptible to transitory influences than are IQ tests." (Gallagher, 1966, p. 19) After conducting a comprehensive review of validation and prediction studies of divergent thinking tests, Nicholls (1972) concluded that divergent thinking is characteristic of highly creative persons. However, he urged caution in the uncritical acceptance of these tests as definitive measures of creativity, as follows:

> *The lack of association between high-level creative achievement and divergent-thinking tests could reflect inadequacies of test form and content. This may also be because these tests measure only one portion of the creative process* (p. 719).

Nicholls suggested that whenever possible an analysis of creative products would be preferable to the trait-based approach in making predictions about creative potential (p. 721).

Wallach (1976) reached a similar conclusion in his extensive review of creative studies. A number of the studies he analyzed found correlations between ideational fluency and such variables as out-of-school attainments in literature and science (Wallach and Wing, 1969), ratings of expressiveness in children's drawings (Singer and Weaton, 1971), and clay products (Wallbrown and Huelsman, 1975). However, he suggested that "it is difficult to describe measurable relationships between creativity and eminence" (p. 60), and recommended that work samples and verifiable signs of creative potential be provided by qualified judges. The procedure recommended by Wallach would involve having candidates for special programs submit examples of their best written work or reports on scientific projects they have conducted (p. 60). Wallach also suggests that student self-reports about creative accomplishments are sufficiently accurate to provide a usable source of data. He cites Maxey and Ormsby's (1971) study in which a high level of agreement was found between student reports on out-of-school accomplishments and information provided by the school (p. 58).

Although few persons would argue against the importance of including creativity in a definition of giftedness, the conclusions and recommendations discussed above once again raise the haunting issue about subjectivity in measurement. Thus, our problem so far as creativity is concerned is not so much in the area of definition, but rather in offering recommendations or guidelines about procedures for identifying creative potential. As was indicated earlier, persons in the arts have for years relied upon sample products and performances. In view of what the research tells us about the questionable value of more objective measures of divergent thinking, perhaps the time has come for persons in all areas of endeavor to develop more careful procedures for evaluating the products of candidates for special programs.

Task Commitment

The last cluster of characteristics that are consistently found in creative/productive individuals constitutes a refined or focused form of motivation known as task commitment. Whereas motivation is ususally defined in terms of a general energizing process that triggers responses in organisims, task commitment represents energy brought to bear on a particular problem (task) or specific performance area. One might metaphorically define the role played by this cluster of traits as the psychological "yeast" that activates the manifestation of creative productivity.

The argument for including this non-intellective cluster of traits in a definition of giftedness is nothing short of overwhelming. From popular maxims[1] and autobiographical accounts to hard-core research findings, one of the key ingredients that has characterized the work of gifted persons is their ability to involve themselves totally in a specific problem or area for an

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1. Thomas A. Edison is reported to have said, "Genius is one percent inspiration and ninety-nine percent perspiration."

extended period of time. Before presenting a discussion of research findings that support this position, let us take a brief look at some concerns about task commitment that have been put forth by two persons upon whose legacy the field of education for the gifted is founded.

Sir Francis Galton occupies a very special position in this legacy because he is considered to be both the father of modern psychometrics and the first person (at least in the Western world) to carry out scientific studies of genius. Although Galton was a strong proponent of the hereditary basis for what he called "natural ability," he nevertheless suscribed heavily to the belief that hard work was part and parcel of the making of a gifted person, as follows:

> *By natural ability, I mean those qualities of intellect and disposition which urge and qualify a man to perform acts that lead to reputation. I do not mean capacity without zeal, nor zeal without capacity, nor even a combination of both of them, without an adequate power of doing a great deal of very laborious work. But I mean a nature which, when left to itself, will, urged by an inherent stimulus, climb the path that leads to eminence and has strength to reach the summit – on which, if hindered or thwarted, will fret and strive until the hindrance is overcome, and it is again free to follow its laboring instinct (Galton, 1869, p.33, as quoted in Albert, 1975, p.142).*

The monumental studies of Lewis Terman undoubtedly represent the most widely recognized and frequently quoted research on the characteristics of gifted persons. Terman's studies, however, may have unintentionally left a mixed legacy because most persons have dwelt (and continue to dwell) on "early Terman" rather than the conclusions he reached *after* several decades of intensive research.

When Terman began his studies in 1911 he used as his selection criterion the top one percent level in general intellectual ability as measured by the *Stanford-Binet Intelligence Scale* (Terman, 1926). The comprehensiveness of his research design, which included a detailed follow-up of his subjects, gained widespread attention among educators and psychologists. Thus, his work quickly became recognized as *the* definitive study of giftedness. It is not surprising, therefore, that for several decades Terman's population of high IQ persons became synonomous with the word "gifted." Nor is it surprising that most people could not resist the temptation of taking the next easy (albeit illogical) step of simply making high intelligence the *de facto* definition of giftedness.

Before accepting this definition, however, it is important to consider the following conclusion that Terman reached as a result of thirty years of follow-up studies on the same population:

> *. . . a detailed analysis was made of the 150 most successful and 150 least successful men among the gifted subjects in an attempt to identify some of the non-intellectual factors that affect life success . . . Since the less successful subjects do not differ to any extent in intelligence as measured by tests, it is clear that notable achievement calls for more than a high order of intelligence.*

> *The results (of the follow-up) indicated that personality factors are extremely important determiners of achievement. . . . The four traits on which (the most and least successful groups) differed most widely were* persistence in the accomplishment of ends, integration toward goals, self-confidence, *and freedom from inferiority feelings. In the total picture the greatest contrast between the two groups was in all-round emotional and social adjustment, and in* drive to achieve (Terman, 1959, pp.148, italics not in the original).

The words that have been italicized in the above quotation are an almost perfect definition of task commitment. Although Terman never suggested that task commitment should replace intelligence in our conception of giftedness, he did state that "intellect and achievement are far from perfectly correlated." To identify the internal and external factors that help or hinder the fruition of exceptional talent, and to measure the extent of their influence, are among the major problems of our time (Terman, 1954, p. 230).

The legacy of both Galton and Terman clearly indicates that task commitment is an important part of the making of a gifted person. Galton believed strongly in the idea that intrinsic motivation and the capacity for hard work were necessary conditions for superior accomplishment. And if three decades of intensive research caused Terman to take a second look at what makes giftedness, then perhaps the time has come for us to apply his results and conclusions to a reconsideration of our definition.

In addition to the work of Galton and Terman, several more recent research studies have shown that creative/productive persons are far more task oriented and involved in their work than are people in the general population. Perhaps the best known of these studies is the work of Roe (1952) and MacKinnon (1964, 1965). Roe conducted an intensive study of the characteristics of 64 eminent scientists. Although the intellectual ability range of her subjects was wide, "the group as a whole was characterized by high average intelligence" (p. 23). The following summary statement, however, points out that *all* of her subjects had a high level of commitment to their work:

> *The one thing that all of these 64 scientists have in common is their driving absorption in their work. They have worked long hours for many years, frequently with no vacations to speak of, because they would rather be doing their work than anything else* (Roe, 1952, p. 25).

What is perhaps an even more significant result of Roe's study was that many of her subjects showed interests in particular areas at an early age. This finding certainly has implications for the feasibility of building task commitment into identification procedures.

MacKinnon's (1964) study of highly creative architects lends additional support for placing greater emphasis on the role played by task commitment and other non-intellectual characteristics in identifying gifted persons. MacKinnon and his co-workers found that creativity and eminence in architecture do not require IQs beyond those of most college graduates. Tests of intelligence did *not* distinguish between his most and least creative groups. The following statement, however, points out traits that were important in creative accomplishment:

It is clear that creative architects more often stress their inventiveness, independence and individuality, their enthusiasm, determination, *and* industry (1964, p. 365, italics not in the original).

Once again, the traits italicized in the above quotation can easily be viewed as factors in the general cluster that is being described here as task commitment.

In a review of studies dealing with the characteristics of creative/productive individuals Nicholls (1972) found patterns that were consistently similar to the research findings reported by Roe and MacKinnon:

Barron (1969) observed "hard work and dedicated practice are the almost invariable precursors of original and distinctive achievement." (p. 3) *Maddie (1965) also emphasizes the active striving and intensity of involvement that is typical of eminent creatives but overlooked in much of the creativity literature. According to Campbell's (1960) model, motivation can play a major part in the generation of thought because "without something of a fascination for the subject one grows weary of the task."* (p. 385)

. . . . Crutchfield (1962) suggests that creative subjects are resistant to social pressure because of a stronger orientation to task requirements.

A number of studies find eminent creatives characterized by high levels of task involvement. McCurdy (1960) contended that:

. . .eminent people are highly independent by virtue of reliance on and commitment to their own ideas. . .
MacKinnon's (1964), 1965) creative architects were inclined to strive where independent activity was called for and were guided by self-generated standards of excellence. This pattern was also found with mathematicians (Helson, 1971; Helson and Crutchfield, 1970). Taylor and Ellison (1967) and Chambers (1964) found self-initiated, task-oriented striving a distinguishing characteristic of creative scientists; Barron (1963) obtained similar findings for writers (Nicholls, 1972, p. 720).

Although the studies reviewed thus far used different research procedures and dealt with a variety of populations, there is a striking similarity in their major conclusions. First, academic ability (as traditionally measured by tests or grade point averages) showed limited relationships to creative/productive accomplishment. Second, non-intellectual factors, and especially those that related to task commitment, consistently play an important part in the cluster of traits that characterized highly productive people. Although this third cluster of traits is not as easily and objectively identifiable as general cognitive abilities, these traits are, nevertheless, a major component of giftedness and should therefore be reflected in our definition.

IV. DISCUSSION AND GENERALIZATIONS

The studies reviewed above lend support to a small number of basic generalizations that can be used to develop an operational definition of giftedness. The first of these generalizations is that giftedness consists of an interaction among three clusters of traits – above average but not necessarily superior general abilities, task commitment, and creativity. Any definition or set of identification procedures that does not give equal attention to all three clusters is simply ignoring the results of the best available research dealing with this topic.

Related to this generalization is the need to make a distinction between traditional indicators of academic proficiency and creative productivity. A sad but true fact is that special programs have favored proficient lesson-learners and test-takers at the expense of persons who may score somewhat lower on tests but who more than compensate for such scores by having high levels of task commitment and creativity. It is these persons that research has shown to be the group who ultimately make the most creative/productive contributions to the respective fields of endeavor. Indeed, when proposals are developed to obtain support for special programs we almost always write about young people who will be the makers and shapers of the future – the persons who will cure diseases, solve environmental problems, and create the art, music, and other masterpieces that enrich the lives of all mankind. The time is long past due when we stop discriminating against persons who have the highest probability for such accomplishment.

In fact, de-emphasizing the importance of task commitment and creativity can result in an educational "vicious cycle" in which the proficient lesson-learner *cannot* perform well independently. This problem is clearly illustrated in the following description of a program relying heavily on traditional indicators of academic proficiency to identify students for special programming:

> *We have found that stimulation by one's intellectual peers within a homogeneously grouped class which is fast-paced by the teacher produces astoundingly good results for about half the students enrolled. . . . Most of our students who have tried self-pacing. . . move far less swiftly and well than they do in special fast mathematics classes* (Stanley, 1977, p. 95).

A second generalization is that an operational definition should be applicable to all socially useful performance areas. The one thing that the three clusters discussed above have in common is that each can be brought to bear on a multitude of specific performance areas. As was indicated earlier, the interaction or overlap among the clusters "makes giftedness," but giftedness does not exist in a vacuum. Our definition must therefore reflect yet another interaction, but in this case it is the interaction between the overlap

of the clusters and any performance area to which the overlap might be applied. This interaction is represented by the large arrow in Figure 3 (p. 26).

An important part of this generalization is concerned with placing general abilities and specific performance areas in proper perspective. General abilities are included within the clusters of the three-rings, but if a definition is to be operational in terms of what teachers teach and the ways in which human beings express themselves, the target of the three rings must be specific-performance areas. We do not offer courses or college majors in IQ, nor do people pursue careers or avocational activities in ideational fluency or semantic transformations. Once again, these are general abilities within the clusters that are *brought to bear* on specific areas of human expression.

A third and final generalization is concerned with the types of information that should be used to identify superior performance in specific areas. Although it is a relatively easy task to include specific performance areas in a definition, developing identification procedures that will enable us to recognize specific areas of superior performance is a more difficult problem. The test development industry has thus far devoted most of its energy to the development of measures of general ability, and this emphasis is undoubtedly why we rely upon them so heavily in identification. An operational definition, however, should also give direction to needed research and development, especially as these activities relate to instruments and procedures for student selection. A defensible definition can thus become a model that will generate vast amounts of appropriate research in the years ahead.

V. A DEFINITION OF GIFTEDNESS

Although no single statement can effectively integrate the many ramifications of the research studies desrcribed above, the following definition of giftedness attempts to summarize the major conclusions and generalizations resulting from this review of research:

> *Giftedness consists of an interaction among three basic clusters of human traits – these clusters being above average general abilities, high levels of task commitment, and high levels of creativity. Gifted and talented children are those possessing or capable of developing this composite set of traits and applying them to any potential valuable area of human performance. Children who manifest, or who are capable of developing, an interaction among the three clusters require a wide variety of educational opportunities and services that are not ordinarily provided through regular instructional programs.*

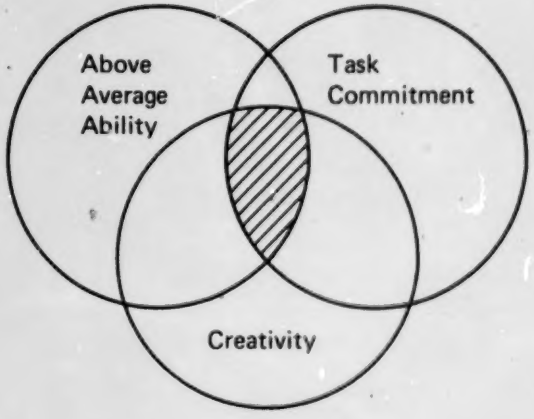
A graphic representation of this definition is presented in Figure 3. The definition is an operational one because it meets three important criteria. First, it is derived from the best available research studies dealing with the characteristics of gifted and talented individuals. Second it provides guidance for the selection and/or the development of instruments and procedures that can be used to design defensible identification systems. And finally, the definition provides direction for programming practices that will capitalize upon the characteristics that bring gifted youngsters to our attention as learners with special needs.

Figure 3.

Graphic Representation of the Definition of Giftedness

GENERAL PERFORMANCE AREAS

Mathematics	Visual Arts	Physical Sciences	
Philosophy	Social Sciences	Law	Religion
Language Arts	Music	Life Sciences	Movement Arts



SPECIFIC PERFORMANCE AREAS

Cartooning	Astronomy	Public Opinion Polling				
Jewelry Design	Map Making	Choreography	Biography			
Film Making	Statistics	Local History	Electronics			
Musical Composition	Landscape Architecture					
Chemistry	Demography	Microphotography				
City Planning	Pollution Control	Poetry				
Fashion Design	Weaving	Play Writing				
Advertising	Costume Design	Meteorology				
Puppetry	Marketing	Game Design	Journalism			
Electronic Music	Child Care	Consumer Protection				
Cooking	Ornithology	Furniture Design	Navigation			
Genealogy	Sculpture	Wildlife Management	Set Design			
Agricultural Research	Animal Learning	Film Criticism				
Etc.	Etc.	Etc.	Etc.	Etc.	Etc.	Etc.

*This arrow should be read as ". . .brought to bear upon. . ."

VI. GUIDELINES UNDERLYING IDENTIFICATION SYSTEMS

Although procedures for identifying gifted and talented students will vary from program to program, certain general guidelines can be applied to almost all programs. A comprehensive and systematic plan for identification should attempt to take account of as many of the following guidelines[1] as possible:

A. An adequate plan for the identification of gifted and talented individuals requires use of a variety of techniques over a long period of time.

   1. There are many ways in which the gifted and talented may express themselves.

   2. Gifted and talented performances may emerge at certain times in life and under certain opportune conditions.

B. Identification of gifted and talented individuals should be based on knowledge of the individual, the cultural-experiential context in which the individual has developed, and the fields of activity in which he or she performs.

   1. At least some methods of identification should be individualized, yielding case study data unlikely to be obtained by group standardized methods.

   2. Identification techniques can be locally developed, with methods and criteria which are appropriate for the particular population to be studied.

   3. The identification process should call for systematic involvement of those professionals who are acquainted with individuals through direct observation of behavior and performances.

   4. The identification process should call for involvement of those persons best qualified to judge the quality of a performance or product. This is especially important in areas such as the visual and performing arts.

   5. The identification process should involve persons best qualified to understand the culture and specific circumstances of individuals whose performances are being assessed.

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1. These guidelines are adapted from an unpublished paper prepared by Dr. Marshall Sanborn, Research and Guidance Laboratory for Superior Students, University of Wisconsin, Used with permission.

C. Both self-chosen and required performances should be assessed.

D. Considerable freedom of expression of response should be allowed.

E. Adequacy of the identification program should be continuously re-assessed.

   1. Follow-up study should involve both those who were identified as gifted or talented and those who were not.

   2. On the basis of evidence obtained, methods and procedures for identification should be modified by refining, adding, and deleting.

   3. On the basis of evidence, those individuals who have been misclassified *may* be reclassified as appropriate.

F. Evidence obtained during the identification process should provide a primary basis for programming experiences and opportunities.

VII. TYPES OF INFORMATION USED IN IDENTIFICATION SYSTEMS

The comprehensive approach suggested by the above definition and guidelines requires that we use a wide variety of case-study information when selecting youngsters for participation in special programs. Decisions regarding just how much information should be gathered and the specific instruments and procedures that should be used will depend on two major concerns. The first of these concerns is programmatic. Simply stated, there should be a logical relationship between the types of performance that a special program is attempting to foster in a given student and the instruments and procedures that are used to assess that student's eligibility for supplementary services. In other words, if a program offeres advanced training opportunities in drama and the movement arts, then above-average ability, task commitment, and creativity *in these performance areas* should be the major factors around which we build our identification procedures. Similarly, if a special program consists mainly of advanced-level course work in a traditional academic area, and such course work does not emphazise (or even allow for) creative applications or the pursuit of individual and self-initiated research activity, then it is reasonable simply to use appropriate-ability test scores for identification. Although this approach to programming (that is, advance courses without an emphasis on creative/productive applications) is not the one being advocated by the writer,[2] research has shown that traditional tests do in fact predict proficiency in traditional lesson-learning situations. For this reason, the same principle applies. For example, there is a logical and empirical relationship between advance scores on mathematics-aptitude tests and the ability to earn high grades in advanced math courses. Thus, a "straight" test score approach to identification appears to be warranted in this situation because the basic programmatic experience consists of skill and concept learning in advanced mathematics.

A second concern about the types and amount of information that should be used for identification is purely practical. The amount of time, money, and resource persons available for screening and selection must obviously be taken into account as we begin to develop identification systems for particular programs. Unfortunately, there has been very little research about the cost effectiveness or efficiency of various approaches to identification. In cases where such studies have been carried out, the ultimate criterion measure for judging the efficiency and effectiveness of alternative identification has almost always been individual intelligence tests. This approach presumes that an individual IQ score is the only valid way of

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2. For a detailed discussion of the programming approach advocated by the writer, see: Renzulli, J. S. *The Enrichment Triad Model: A Guide to Defensible Programming for the Gifted and Talented*, Mansfield Center, CT: 1977.

determining if a person is "really gifted," and thus it discriminates against conceptions of giftedness that take into consideration factors such as task commitment and creativity.

A study by Renzulli and Smith (1977) compared traditional test-score methods of identification with various case-study approaches that used several types of identification information. In this study the criterion for effectiveness consisted of follow-up evaluations of student success in their respective programs and the degree to which regular and special-program teachers rated the appropriateness of student placement. Time and cost analyses were also carried out.

The results of this study indicate that the two approaches were equally effective from the classroom teachers' perspective, but special-program teachers showed significantly higher ratings of effectiveness in places where the case-study approach was used. The case-study approach also was more sensitive to identifying academically able students in schools that serve minority group populations. One of the most significant findings of the study was that, contrary to popular belief, the case-study approach was far more economical than the traditional method. In fact, the case-study approach costs approximately one-third as much as the traditional approach and required approximately one-half as much professional time per selected student.

A third concern relative to the screening/selection process combines the need for more appropriate criterion measures (as described in the previous study) for judging the effectiveness of identification methods with the need to search for alternate sources of identification information. A study by Jenkins (1978) compared the empirical contributions of various selection criteria to ratings of student success in a gifted program. In this study, success was defined operationally as the student's level of accomplishment of specified program objectives. The relative predictive worth of such traditional selection criteria as intelligence and achievement test scores, guided teacher ratings, and scores on a measure of creative thinking was assessed against the contributions of ratings obtained from playing a peer-nomination simulation game in regular classroom settings. In this study, the criterion variable consisted of composite ratings of student success, obtained from four sources (special-program and regular-class teachers, parents, and students themselves) and weighted by the proportion of actual and, subsequently, the desired degree of influence of each rating source in the placement process (as perceived by experts in the field).

Two of the study's findings have the following implications for the identification process: First, that results were statistically significant only when the ideal composite rating was employed (that is, when students themselves and regular class teachers had greater proportions of influence). Second, peer nomination was a more powerful predictor of student success than any of the traditional identification measures. These results suggest that untrained peers might provide useful screening information, even for young children (the study employed kindergarten through fourth graders). That the only statistically significant findings were observed when the ideal ratings were employed suggests that the relative influence of information sources might need reconsideration.

In view of the above findings and the research studies summarized in earlier sections of this paper, it is recommended that identification systems

include a balanced combination of the following five families of identification information:

A. Preschool and Developmental Information

1. Advanced expressions of interest or talent in a given area or areas.
2. Precocity in physical or intellectual development such as early walking, talking, or reading
3. Evidence of social and emotional maturity

B. Psychometric Information

1. Standardized tests of intelligence, aptitude, achievement, creativity, and other cognitive processes
2. Interest inventories
3. Self-ratings and teacher ratings of past accomplishments in particular performance areas
4. Peer ratings of unusual accomplishments in particular areas

C. Performance Information

1. Summaries and analyses of work completed
2. Actual samples of highly creative products such as stories, paintings, projects, or inventions
3. Descriptions of outstanding performances in areas such as music, drama, or situations that require advanced leadership ability

D. Motivational Information

1. Written or verbal expressions of aspirations, interests, ambitions, and plans for the future
2. Expressions of insights, self-understanding, and commitments to particular areas of creative endeavor
3. Performance evidence of intensive and sustained interest in a particular hobby, topic, activity, or cause

E. Sociometric Information

Peer nominations.

VIII. THE REVOLVING DOOR CONCEPT

Let us now examine one way in which we can use the ideas presented here to resolve a basic dilemma between theory and practice and perhaps overcome "the all-or-nothing-at-all concept." You will recall that in the Foreword we discussed the need to make certain compromises between theory and practice and to strike a balance between the two rows of "building blocks" presented in Figure 1. (that is, the idealistic and the practical). In many states and school districts the guidelines or regulations governing programs for the gifted require that students be *pre*selected for admission to a special program. Oftentimes, these regulations are based on financial concerns and, in some cases, state reimbursement formulas set limits on the proportion of students that are eligible for special programs. In certain states, reimbursement is a direct function of the number of "identified gifted students" in a given school district and the criteria for identification are frequently mandated in terms of standardized test scores.[1]

Although these regulations are undoubtedly the reason why most youngsters are selected for special programs on an "all-or-nothing-at-all" basis, there is a certain amount of financial control and administrative efficiency that results from such rules. The regulations are clearly *not* justifiable in view of the research reviewed above, however, we also must live with the reality that bureaucracies and governing bodies have a need to exercise some control over finances and the amount of reimbursement that any given school district can receive. If financial planners (state departments or boards of education) did not set some upper limit or ceiling on the number of percent of students to be served by special programs, it is conceivable that far greater demands would be made on local or state finances than could reasonably be allocated. Such limits also help to exercise some quality control over programs by keeping the number of students to be served within reasonable proportion to the number of the teachers assigned to the program. Without these kinds of controls a program could easily become "watered down" to the point that no recognizable growth would take place as a result of special services.

There is a relatively simple solution to this problem and one that will allow us to respect both the concept of differentiated giftedness and the practical requirement of setting numerical and/or financial ceilings on programs. This solution can best be explained by way of an example. Let us assume that in a given state financial reimbursement is provided on a *per capita* basis for students within an IQ of 125 or higher. If general intelligence

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1. Because test scores tend to run higher in middle class and suburban school districts, this approach could easily result in disproportionate amounts of money going to affluent districts at the expense of schools serving lower socioeconomic and minority group youngsters. The solution to this problem (discussed in this chapter) will help to overcome some of this inequity.

in a particular school or district is normally distributed (that is, Mean = 100, Standard Deviation = 15), we can expect five percent of the school population to be eligible for reimbursement. Thus, if our school district has 1,600 pupils, then 80 students are eligible for reimbursement. We will call this figure (80) the "target number," and in effect agree that this number is the upper limit for which we will seek reimbursement.

Now, two procedural changes need to be made from the traditional approach. First, we must think in terms of seeking reimbursement for a numerical five percent (of the total school population, which is still 80) rather than five per cent based on IQ scores. This change may require some negotiation with the state department of education and perhaps even rewriting certain sections of state guigelines.[2] Keep in mind that we are not asking for additional funds and will stay within the reimbursement figure set by the original target number.

The second procedural change deals with the realtively simple concept of "full-time equivalents," and once again, perhaps the best way to explain how it works is to present an example. Let us assume that in our school district two teachers (or one teacher and a paraprofessional) are in charge of a resource room that traditionally has accommodated 80 students per year. The teacher also spends some time consulting with regular-classroom teachers, teaching demonstration lessons, meeting with parents, etc. The students go to the resource room in groups of 10 or 12 for the equivalent of one day (6 hours) per week.

The concept of full-time equivalents simply means that irregular periodic changes would take place among the students that attend the resource room during any given time block. It does *not* mean that there would be a complete turn-over of the group on a regular basis nor does it mean that certain students would not be allowed to attend the resource room all (or almost all) of the time. Rather, it means that if a particular student shows a high level of commitment and/or creativity in relation to a particular subject or topic, and if we are reasonably certain that the student has above average ability in the particular area of interest, then for a given period of time the student will be able to pursue that topic under the direction of the resource teacher.[3] The student continues to go to the resource room until his or her project is completed. At the conclusion of the project the student "steps aside" and makes room for another child. If on the other hand the student displays some new creative ideas or task commitment in relation to another topic, of he or she would like to conduct more advanced research on the original topic, then we must make another determination as to whether or not the child should continue to have access to the resource room.

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2. I have discussed the reseach summarized here and the three-ring conception of giftedness with several state department of education persons who are responsible for programs for the gifted. In every case, these persons have supported the concept. Therefore, perhaps the time has come to ask these persons to take steps that will transfer their beliefs into positive action.

3. This does not necessarily mean that the resource teacher will "teach" the child. Being a *good* resource person means that you do *not* teach, but rather serve the child in other ways such as problem focusing, obtaining appropriate resources (persons, equipment, reference materials), providing critical feedback and encouragement, or help the child find appropriate outlets for his/her work.

Since the resource room teacher never has more than 10 or 12 students working under her direction during any given time block, she is able to maintain the kind of close contact and provide the individual attention that helps to make the resource room a place for more intensive work than can ordinarily be carried out in the regular classroom. Thus, the program does not become "watered down" due to increased numbers of students during any given time block. The main difference between this approach and the traditional method of having the same students in the program for the entire year is that there is a specific *raison d'etre* for a child (or small group of children working on a common problem) to be in the program for a given period of time. The period of time may be a few weeks or several months, the major determining factor being the amount of time necessary for completing the project or solving a particular problem.[4] In a certain sense, this approach means that a child "earns the right" to obtain special services by showing some or all of the "necessary ingredients" of giftedness (that is, above-average ability, task commitment, and creativity). The concept of "earning the right" to obtain special services will obviously be a controversial one, but this approach will certainly help to overcome some of the very valid criticism that has recently been expressed by parents about the identification process (see especially, Weiler, 1978). This approach also helps to insure *continuous* involvement on the part of the regular classroom teacher. In the traditional approach (that is, the child is preselected and placed in the program for an entire year), the regular and special programs frequently operate as two separate entities and it is not uncommon for the regular classroom teacher "to forget" about advanced expressions of ability once children have been placed in the gifted program. The revolving-door approach, on the other hand, requires the regular classroom teacher to be constantly on the look-out for signs of interest, creativity, task commitment and advanced expressions of ability. In addition to becoming a more sensitive "talent spotter," the regular classroom teacher can become more involved by providing certain types of enrichment experiences[5] that will become useful as the situations or occasions for spotting children who should be "fed into" the resource room. The resource room becomes a place where extensions of the regular curriculum and more advanced levels of involvement can occur.

This approach can also help to overcome one of the main deficiencies of special programs that are organized around the resource room or itinerate teacher model. Most resource room teachers are not resources – they are teachers in the traditional sense of the term. In far too many instances when I have visited resource rooms, the teacher is teaching predetermined, prescribed lessons to the entire group. The content of the lessons may be different from the content of the regular curriculum, and the atmosphere may be a little more relaxed, but otherwise, the learning or instructional model is exactly the same as the type of teaching that goes on in any good classroom. If resource teachers want to become real resources to gifted and talented children, then

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4. "Solving a problem" is not used here in the problem-solving-worksheet or structured exercise meaning of this term.

5. In *The Enrichment Triad Model* (Renzulli, 1977) two of the three types of enrichment are clearly recommended for all children and can easily take place in the regular classroom.

they must drastically reduce the amount of time that they spend instructing students and "teaching lessons." A real resource person *serves* an individual student (or small group of students working on a common project) in much the same way that a graduate advisor serves a doctoral student working on a research project. The teacher helps the student to focus or frame the area of interest into a researchable problem; suggests where the student can find appropriate methodologies for pursuing the problem like a professional inquirer; helps the youngster to obtain appropriate resources (persons, equipment, reference materials, fincancial support), provides critical feedback, editorial assistance, encouragement, and a shoulder to cry on; and helps the child find appropriate outlets and audiences for his or her creative work.

But how, you may ask, can the revolving-door approach help to accomplish these types of behaviors on the part of resource room teachers? The answer to this question lies in the greater emphasis that this approach places on the *individual* child, the child's particular area of interest and his or her commitment to work on a certain problem.[6] In other words, the *raison d'etre* that caused us to send children to the resource room becomes the basis for the supplementary services that are provided when they are working under the direction of the resource teacher. The revolving-door approach, in a certain sense, "forces" the resource teacher to deal with the individual child and the specific reason that the child was sent to the resource room.

This approach also will help us in matters of accountability and program evaluation. If we know the specific reason why a given child was sent to the resource room, and if we have some documentation about the specific services that were provided, then we can review the youngster's work and make determinations about growth in relation to the objectives set forth for the individual student.

By way of summary, the revolving-door approach and the full-time equivalent concepts can help to overcome many of the problems and criticisms that have been associated with programs for the gifted and talented. This is especially true for relatively affluent school districts where large numbers of parents feel that their children are gifted. This approach allows us to serve more students, to avoid the IQ cut-off score game, to place the rationale for advanced level services on characteristics that are unequivocally supported by the research literature, and to shift the emphasis of special programs from lesson-oriented, whole group activities to the development of *individual* strengths and interests.

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6. For a more detailed description of individualized programming see *A Guidebook for Developing Individualized Educational Programs for Gifted and Talented Students*, J.S. Renzulli and L. H. Smith, Creative Learning Press, 1979.

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